This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-41 (Canceled)

Claim 42 (Currently Amended): A parallel data processing architecture for search, storage and retrieval of data of a database responsive to client queries for specific data of said database, said parallel data processing architecture comprising:

a plurality of host processors including a root host processor, said root host processor being responsive to said client queries for said specific data of said database, wherein at least two host processors have a search engine and maintain information of a search queue of said client queries;

each of said host and root host processors maintaining a list of available host processors and information about the capacity and load for each available host processor in memory and broadcasting its capacity and load information to other host processors and bringing its search queue into balance with another host processor according to a time constant in response to receipt of said broadcast capacity and load information according to a time constant; and

a communication system coupling said host and root host processors, wherein at least two host processors communicate capacity and load information to other host processors; selected host processors storing a database index for said database in memory comprising nodes of a database tree for said database and data accessible via said nodes of said database tree.

Claim 43 (Canceled)

Claim 44 (Currently Amended): A parallel data processing architecture for search, storage and retrieval of data of a database responsive to client queries for specific data of said database, said parallel data processing architecture comprising:

a plurality of host processors including a root host processor, said root host processor being responsive to said client queries for specific data of said database;

each of said host and root processors maintaining a list of available host processors and information about the capacity and load for each available host processor in memory; and

a communication system coupling said host and root host processors, wherein at least two host processors communicate capacity and load information to other host processors and each have a search engine and each maintain load information of a search queue length of said client queries; each of said at least two host processors broadcasting its capacity and search queue length load information to other host processors and bringing its search queue of said client queries into balance according to a time constant with another host processor in response to receipt of said broadcast capacity and load information according to a time constant; selected host processors storing a database index for said database in memory comprising nodes of a database tree for said database and data accessible via said nodes of said database tree wherein the plurality of host processors comprises three host processors, of which two host processors have search engines and maintain information of a said search queue of said client queries and the third comprises said root host processor.

Claim 45 (Currently Amended): A parallel data processing architecture for search, storage and retrieval of data of a database responsive to client queries for specific data of said database, said parallel data processing architecture comprising:

a plurality of host processors including a root host processor, said root host processor being responsive to said client queries for said specific data of said database;

each of said host and root processors maintaining a list of available host processors and information about the capacity and load for each available host processor in memory; and

a communication system coupling said host and root host processors, wherein at least two host processors communicate capacity and load information to other host processors and have a search engine and maintain load information of a search queue length of said client queries; each of said at least two host processors bringing its search queue of client queries into balance with another host processor according to a time constant in response to receipt of said broadcast capacity and load information according to a time constant; selected host processors storing a database index for said database in memory comprising nodes of a database tree for said database and data accessible via said nodes of said database tree wherein the plurality of host processors comprises two host processors, of which one comprises said root host processor and

both said host processors have search engines and maintain information of ~~a~~ said search queue of said client queries.

Claim 46 (Currently Amended): A parallel data processing architecture for search, storage and retrieval of data of a database responsive to client queries for specific data of said database, said parallel data processing architecture comprising:

a plurality of host processors including a root host processor, said root host processor being responsive to said client queries for specific data of said database;

each of said host and root processors maintaining a list of available host processors and information about the capacity and load for each available host processor in memory; and

a communication system coupling said host and root host processors, wherein at least two host processors communicate capacity and load information to other host processors; selected host processors storing a database index for said database ~~in memory~~ comprising nodes of a database tree for said database and data accessible via said nodes of said database tree, the root host processor being responsive to a client query for said specific data of said database and using an initial search queue of at least said client query.

Claim 47 (Original): The parallel data processing architecture of claim 46, the root host processor creating a search client object.

Claim 48 (Currently Amended): A parallel data processing architecture for search, storage and retrieval of data of a database responsive to client queries for specific data of said database, said parallel data processing architecture comprising:

a plurality of host processors including a root host processor, said root host processor being responsive to said client queries for said specific data of said database;

each of said host and root processors maintaining a list of available host processors and information about the capacity and load for each available host processor in memory; and

a communication system coupling said host and root host processors, wherein at least two host processors communicate capacity and load information to other host processors; selected host

processors storing a database index ~~for said database~~ ~~in memory~~ comprising nodes ~~of a database~~ ~~tree for said database~~ and data accessible via said nodes ~~of said database tree~~, the root host processor being responsive to a client query ~~for said specific data of said database~~ and selecting a host processor to receive search ~~request~~ ~~query~~ information.

Claim 49 (Currently amended): The parallel data processing architecture of claim 42:

each host processor reconfiguring information on available host processors in response to the receipt of broadcast ~~search queue length~~ ~~load and gathered processor capacity~~ information.

Claim 50 (Original): The parallel data processing architecture of claim 49 wherein the information on available host processors at each available host processor changes in response to failure of a host processor.

Claim 51 (Original): The parallel data processing architecture of claim 49 wherein the information on available host processors at each available host processor changes in response to the addition of a host processor.

Claim 52 (Original): The parallel data processing architecture of claim 42 wherein said plurality of host processors comprises groups of host processors.

Claim 53 (Original): The parallel data processing architecture of claim 52, all host processors in each group operating on the same database.

Claim 54 (Original): The parallel data processing architecture of claim 52, each group being assigned a portion of the database.

Claim 55 (Original): The parallel data processing architecture of claim 54, each group being assigned a different portion of the database.

Claim 56 (Original): The parallel data processing architecture of claim 55, wherein each processor of a group of processors is assigned the same portion of the database.

Claim 57 (Original): The parallel data processing architecture of claim 46, wherein said client query requests storage or retrieval of information to be performed and wherein work of said storage or retrieval is distributed among a cooperating group of host processors.

Claim 58 (Currently Amended): The parallel data processing architecture of claim 46, each host processor maintaining a search queue of said client queries and broadcasting its capacity and search queue length load information to other host processors and each host processor bringing its search queue into balance according to a time constant with another host processor responsive to receipt of said broadcast capacity and search queue length load information according to a time constant, said balancing including exchanging unprocessed search requests with a recipient host processor responsive to a stochastic selection process.

Claim 59 (Currently amended): The parallel data processing architecture of claim 42, at least two host processors having a queue of search requests for specific data of said database, each of said host processors executing a search engine, communicating capacity and load information between host processors and said at least two host processors exchanging at least one search request.

Claim 60 (Original): The parallel data processing architecture of claim 59, the search engine removing at least one search request from a search queue and generating an additional search request.

Claim 61 (Currently amended): The parallel data processing architecture of claim 42, said database index being a database tree for said database, said host processors capable of executing

a set of tests, associating one test to each non-terminal node of said database index for said database.

Claim 62 (Original): The parallel data processing architecture of claim 42, said available host processors comprising groups of m processors where m is an integer greater than 1.

Claim 63 (Original): The parallel data processing architecture of claim 42, wherein said communications system is proximately located to said root host processor.

Claim 64 (Currently amended): The parallel data processing architecture of claim 42, wherein the plurality of host processors comprises at least two host processors having search engines and maintaining information of a search queue of said client queries, one of said host processors processing a search request and generating a new search request.

Claim 65 (Currently amended): The parallel data processing architecture of claim 64 wherein said database comprises DNA profiles, said new search request being generated in response to one of target, match stringency, mismatch, equivalence, number of alleles and measurement error specifications, said bringing its search queue into balance with another host processor according to a time constant minimizing the time required for performing a search request for DNA profiles satisfying a set of selected database search criteria.

Claim 66 (Currently amended): In a parallel data processing architecture for search, storage and retrieval of data of a database responsive to queries for specific data of said database, said parallel data processing architecture comprising a) a plurality of host processors comprising at least one root host processor responsive to a client query for said specific data of said database and at least one host processor; b) a communication system coupling said host processors, said host processors capable of communicating with one another; and c) host processor memory, a method of balancing workload between said host processors characterized by the steps of:

each of said host processors maintaining processor capacity and search queue length load information of said host processors and of a search queue of client queries for said specific data of said database;

each host processor broadcasting its processor capacity and search queue length load information to other host processors ; and

each host processor bringing its search queue of client queries into balance with another host processor according to a time constant responsive to receipt of said broadcast capacity and load information according to a time constant, said balancing including exchanging unprocessed search requests with a recipient host processor responsive to a stochastic selection process and by stochastic selection of a host processor to determine the recipient host processor of an exchanged search request between host processors thereby minimizing a time required to respond to client queries for retrieval of responsive data from said database.

Claim 67 (Canceled)

Claim 68 (Currently amended): In a parallel data processing architecture for search, storage and retrieval of data of a database responsive to queries for specific data of said database, said parallel data processing architecture comprising a) a plurality of host processors comprising at least one root host processor responsive to a client query for said specific data of said database and at least one host processor; b) a communication system coupling said host processors, said host processors capable of communicating with one another; and c) host processor memory, a method of balancing workload between said host processors characterized by :

each of said host processors maintaining processor capacity and search queue length load information of said host processors and of a search queue of client queries for said specific data of said database;

each host processor broadcasting its processor capacity and search queue length load information to other host processors ; and

each host processor bringing its search queue of client queries into balance with another host processor according to a time constant responsive to receipt of said broadcast capacity and

~~load information , said balancing including exchanging unprocessed search requests with a recipient host processor responsive to a stochastic selection process to determine the recipient host processor of an exchanged search request between host processors thereby minimizing a time required to respond to client queries for retrieval of responsive data from said database.The method of claim 66 wherein the step of~~ bringing a search queue of client queries into balance ~~further comprises~~ comprising ~~the step of~~ exchanging a block of search requests between host processors, thereby minimizing a time required to respond to client queries by said exchanging of said block of search requests.

Claim 69 (Currently amended): The method of claim ~~66~~ 68 further comprising ~~the step of~~ changing the size of blocks of search requests.

Claim 70 (Currently amended): The method of claim 66, the root host processor using an initial search queue for a client query for said specific data.

Claim 71 (Currently amended): The method of claim 66, the root host processor selecting a search queue of client queries for specific data of said database of another host processor as an initial search queue of client queries.

Claim 72 (Currently amended): In a parallel data processing architecture for search, storage and retrieval of specific data of a database responsive to queries for said specific data, said parallel data processing architecture comprising a) a plurality of available host processors comprising at least one root host processor responsive to a client query for said specific data and at least one host processor; b) a communication system coupling said available host processors, said available host processors capable of communicating with one another; and c) host processor memory, a method of storing information of available host processors for responding to client queries for specific data of said database comprising ~~the steps of~~:

at least two host processors having a search engine and maintaining information on said plurality of said available host processors and on their processor capacity and load and including information of a search queue length of client queries;

each host processor broadcasting its capacity and load information to other host processors and bringing each search queue of client queries into balance with another host processor according to a time constant in response to receipt of said broadcast capacity and load information according to a time constant, said bringing its search queue into balance comprising equalizing average waiting times for service and computation between said search engines;

stochastic selection of host processors to determine a recipient host processor for an exchanged search request for searching said database, said host processor storing a database index for said database in memory comprising nodes of said database index for said database and data accessible via said nodes and

each host processor reconfiguring information on available host processors responsive to the receipt of said broadcast information of said capacity and load information.

Claim 73 (Currently amended): The method of claim 72 wherein the information on available host processors at each available host processor changes in response to failure of a host processor, said changing information on available host processors permitting a swapping of another available host processor for said failed host processor.

Claim 74 (Currently amended): The method of claim 72 wherein the information on available host processors at each available host processor changes in response to the addition of a host processor, said changing information on available host processors permitting an addition of a host processor upgraded with more current technology than possessed by an available host processor.

Claim 75 (Currently amended): The data processing architecture of claim 42, further comprising shared memory between host processors.

Claim 76 (Previously presented): The data processing architecture of claim 42, further comprising distributed memory among each processor.